

A new project aims to convert garbage into medicine

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Don't resort to throwing everything out. Source: Getty Images

WHAT do fish heads, orange peel and grape skins all have in common? They're rich in vitamins and minerals but often end up in the bin.

One company's food waste could be transformed into another's treasure - or even a product that improves our health and wellbeing. This is the premise of research at the University of Sydney that's investigating how discarded food can be rich in nutrients.

Professor Fariba Dehghani, of the university's school of chemical and biomolecular engineering, is leading the ongoing project and says its aim is to find better ways to use the entire fruit, veg or seafood, including the skin and shells.

"Valuable resources are ending up as waste. But some of this waste can easily be converted into high-value products such as nutraceuticals - food products that are fortified with vitamins or minerals and that provide health benefits as well as nutritional value - or to generate energy," Dehghani says.

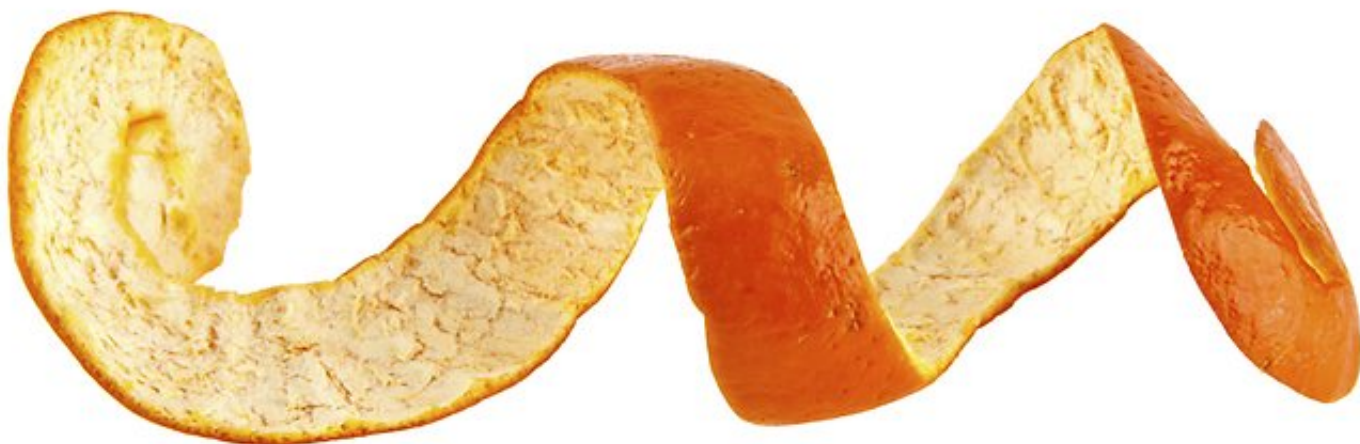


Tia Mohamed tries not to waste food. Picture: Jason Sammon Source: HeraldSun

According to global statistics, we consumers are a wasteful lot. Almost a third of food produced for human consumption - in 2011 that equated to about 1.3 billion tonnes per year - is either lost or wasted. That discarded food could feed the entire world's population. The main culprits seem to be industry, as the food loss occurs primarily in the production-to-retail phase of the food chain.

But with research, some of these by-products of food production could end up making us healthier rather than rotting in landfill, Dehghani says, adding that her unit has partnered with several companies to assist in the investigation. Here are some of the interesting waste-conversion projects her team is exploring.

ORANGE PEEL



Consumers may love to eat the sweet and juicy flesh of oranges, but when we - and the industry - throw away the skin, we're binning not only a great source of fibre but also potential cancer-fighting properties. Dehghani says global research has found that the peel is high in antioxidants linked with fighting cancer. "Our researchers will be looking at how to extract the goodness from the peel," she says.

GRAPE SKIN

It may seem to just contain the juicy flesh, but grape skin is full of goodness, in particular the health-boosting polyphenol resveratrol. A University of Missouri study found that resveratrol made melanoma cells respond better to radiation treatment. Earlier studies have found it can also have a similar impact on prostate cancer cells.

FISH HEADS

Fish scales, brains and cartilage are highly nutritious, and contain extra-high levels of vitamin A, omega-3 fatty acids, iron, zinc and calcium. Earlier this year, the Food and Agriculture Organization of the United Nations called for better use of marine by-products, saying that often these have more nutrients than the fillets. Dehghani says her team will be looking into how to make better use of this marine waste.

SOY BY-PRODUCTS



A farmer harvesting his soybean crop. *Source:* AFP

The humble soybean is spun into an array of products and what's binned can also be rich in nutritional goodness. A study by the University of Illinois has shown that the soy peptide lunasin - which is usually discarded in the waste streams of soy-processing plants - has cancer-fighting chemicals and anti-inflammatory properties. But what Dehghani is excited about is how this soy waste can be used in a fermentation process to produce high levels of vitamin MK-7. One benefit is that instead of eating 5kg of cheese, we'd only need less than a teaspoon of oil produced by this technology to build strong bones and help reduce the risk of osteoporosis and even fight cardiovascular disease.

GET THE GOODNESS FROM WASTE TODAY

While scientists get closer to creating medicines from everyday waste, here are some easy ways to reuse food scraps and reap the health benefits.



Vitamins A, C and E can make your skin smoother and firmer. *Source:* Sunday Magazine

CITRUS PEELS

Make a zest from your citrus peels and use them to add flavour (and vitamin C) to everything from salad dressings to roasts. Zest can be stored in the freezer.

CELERY LEAVES

Chop finely and add a handful of leaves to soups, salads and juice. They can be a substitute for fresh parsley or coriander.



Fresh coffee beans. Picture: Jason Busch *Source:* Supplied

COFFEE BEANS

The nitrogen in coffee beans make them excellent compost fodder. You can also turn them into an exfoliant by mixing equal amounts of ground beans and water or olive oil.

CHICKEN BONES

After you've cooked and eaten your chicken, boil up the bones along with vegies and herbs to make a delicious home-made chicken stock.

EGGSHELLS

Pulverise a dried eggshell and mix with one egg white for a great (and cheap) skin-tightening mask that draws out toxins.



It's BYO tea bags in some companies. Picture: Bruce Long Source: News Limited

USED TEA BAGS

The tannins in tea help soothe myriad skin conditions. Place a chilled bag on puffy eyes or sunburnt skin, or add a few to a hot foot bath to kill odour-causing bacteria.

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SOURCE: <http://www.news.com.au/lifestyle/food/turning-garbage-into-medicine/story-fneuz8wn-1226985828522>